Pastel

IMPORTANT NOTICE

Network Working Group
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THREE AIDS TO IMPROVED NETWORK OPERATION

1. Scheduled Software Maintenance

As the ARPA Network has grown larger, we have found it difficult to find times when necessary new software can be slipped into the network without disrupting anyone. For instance, there is always intrasite traffic between the machines at MIT, and there is almost always traffic between the AMES TIP and IMP--the sun never sets on the ARPA Network. To minimize unscheduled disruptions and to simultaneously let us do what we have to do, we propose to schedule 7 A.M. - 8 A.M. eastern time every Tuesday as a time when the IMPs can be reloaded. We will probably not use this period every Tuesday, but we do reserve this period every Tuesday. The above period is in addition to the several hours a month already scheduled at each site for hardware preventative maintenance.

Because a network user may not know when his machine is scheduled for maintenance or because he may forget and work through the Tuesday morning software work period, we propose to generalize the IMP-Going-Down IMP-to-Host control message so it may be used to remind the user. This message (described in detail below) will contain information that the IMP is going down in m times five minutes, for n times 5 minutes, for a given reason. Hosts (and the TIP) should use this information to remind all their Network users that the IMP will be going down after the stated interval.

Occasionally there is an emergency reason for restarting or reloading an IMP. For instance, while three Hosts at a site

are functioning well, one Host cannot communicate with the IMP. This sort of situation sometimes requires the IMP to be restarted. Such a restart will be preceded by several minutes by an IMP-Going-Down message to allow working users to save their work in such a way that they can restart once the IMP is back up.

In both of these cases, as well as cases where an IMP is performing so poorly that it must be shut down quickly, a type 2 IMP-to-Host message will be transmitted to the Host about 30 seconds before the IMP goes down. Finally, of course, there may be occasions when the IMP crashes so quickly that no warning is given, but the IMPs will never be intentionally shut down in this way.

2. IMP-to-Host Communication

There have long been complaints that the IMP-to-Host error messages were not precise enough or were just plain ambiguous. In RFC #312 we proposed some additional error messages. These and other IMP-to-Host message changes will be made on August 14, 1972 and we encourage Hosts to modify their NCP's as appropriate by then. Unmodified NCPs will probably continue to work after this change, but each site should look into this question carefully. The table below lists all the IMP-to-Host messages and clearly indicates the changes which will be made.

Type	Old Meaning	New Meaning
0	Regular message	Same
1	Error without identification	Error in Leader of Host-to-IMP Message Bits 31,32=ØØ - IMP's error flip-flop set on the first 32 bits of a Host-to-IMP message which the IMP therefore cannot identify Bits 31,32=Ø1 - Host-to-IMP message too short (less than 32 bits)

Type	Old Meaning	New Meaning
		Bits 31,32=1Ø - illegal Host-to-IMP code
2	IMP Going Down	IMP Going Down Bits 17-32 coded as follows: All bits zero - going down in 30 sec. Bits 17,18=Ø1 - scheduled hardware PM Bits 17,18=1Ø - scheduled software reload Bits 17,18=11 - emergency reload or restart Bits 19-22 - how soon the IMP is going down - in 5 minute units Bits 23-32 - how long the IMP will be down - in 5 minute units
3	Blocked Link	Unassigned
4	NOP	Same
5	RFNM	Same
6	Link Table Full	Unassigned
7	Destination Dead	Destination Dead Bit 32=Ø - the destination IMP is dead, or cannot be reached, or does not exist Bit 32=1 - the destination Host is dead or does not exist
8	Error with identification	Error in Data of Host-to-IMP Message IMP's error flip-flop set on the data bits of a Host-to-IMP message identified by the given source and link
9	Incomplete Transmission	Incomplete Transmission Bits 31,32=ØØ - the destination Host did not take the message for a long time Bits 31,32=Ø1 - Host-to-IMP message too long (more than 8095 bits) Bits 31,32=1Ø - Host-to-IMP message too slow. The

Type	Old Meaning	New Meaning
		last message took more than 15 secs. between the first bit and the last bit, and was discarded Bits 31,32=11 - Host-to-IMP message lost in the subnet
10	Unassigned	IMP-Host Interface Reset The IMP's ready line has been dropped and pending output to the Host discarded (probably because the Host has not taken messages from the IMP for a long time). The IMP will return a type 1 message of subtype Ø at the completion of the next Host-to-IMP message.

These changes can be summarized as follows:

1. There is now one and only one IMP-to-Host message in response to each Host-to-IMP regular message.
2. Message types 1,2,7, and 9 now carry additional information.
3. Message type 10 has been added.
4. Message types 3 and 6 have been discarded.

3. Network News Service

We have instituted a Network news service. TIP users get the news by typing the TIP command @NEWS. Users of other Hosts can get the news by ICPing to socket 156ØØØ31 (octal) at the BBN Tenex.

If you have further suggestions for improving the operation of the Network, we request your comments.